

What is claimed is:

1. A nonaqueous-electrolyte secondary battery comprising:
a laminating structure, in which at least a positive electrode and a negative electrode are laminated;
a film-like or sheet-like package member covering the laminating structure;
a lead electrode, which joints to the laminating structure and protrudes from an end of the package member toward the outside; and
a sealing member, which is inserted into a gap between the end of the package member and the lead electrode, and seals the gap by fusing a thermoplasticity material.
2. A nonaqueous-electrolyte secondary battery according to claim 1, wherein the sheet-like package member is covered with the package member employing a metal laminate pack material comprising package resin, a metal film, and a sealant layer, and is sealed in its end.
3. A nonaqueous-electrolyte secondary battery according to claim 1, wherein the positive electrode is employed lithium mix oxide whose main base is LiMO_2 (the transition metal M is a material selected from a group of Co, Ni, Mn); and
the negative electrode is employed a non-graphitizing carbon material or a graphite material.
4. A nonaqueous-electrolyte secondary battery according to claim 1, wherein a solid electrolyte or gel-type electrolyte is employed.
5. A nonaqueous-electrolyte secondary battery according to claim 4,

wherein the electrolyte is gel-type electrolyte.

6. A nonaqueous-electrolyte secondary battery according to claim 5, wherein the gel-type electrolyte is made of a fluorine macromolecule containing an electrolyte salt and a solvent.

7. A method of manufacturing a nonaqueous-electrolyte secondary battery including a step of covering a laminating structure, in which at least a positive electrode and a negative electrode are laminated, with a film-like or sheet-like package member, comprising a step of:

sealing a gap between a lead electrode and an end of the package member by fusing a sealing member;

whereby the sealing member made of a thermoplastic material is inserted between the lead electrode and the end of the package member,

wherein the lead electrode connects to the said laminating structure and protrudes from an end of the package member toward the outside.

8. A method of manufacturing a nonaqueous-electrolyte secondary battery including a step of covering a laminating structure, in which at least a positive electrode and a negative electrode are laminated, and formed in a flat shape with a film-like or sheet-like package member, comprising a step of:

sealing a gap between a lead electrode and an end of the package member;

whereby the sealing member made of a thermoplastic material is inserted between the end of the package member and the lead electrode

whose one end connects to the said laminating structure and the other end protrudes from the end of the package members toward the outside, a heater is applied pressure at least to the end of the package member from the outer side at temperature over the fusion temperature for heating and fusing the sealing member.

9. A nonaqueous-electrolyte secondary battery including a step of covering a laminating structure, in which at least a positive electrode and a negative electrode are laminated, and formed in a flat shape with a film-like or sheet-like package member, comprising a step of:

sealing a gap between a lead electrode and an end of the package member;

whereby the sealing member made of a thermoplastic material is inserted between the end of the package member and the lead electrode whose one end connects to the said laminating structure and the other end protrudes from the end of the package member toward the outside, a heater is applied pressure at least to the end of the package member from the outer side, a stripping sheet made of a material such that at least its surface does not fuse and adhere to the sealing member, is inserted, then the heater is applied to heat to the sealing member at temperature over the fusion temperature for fusing the sealing member.

10. A method of manufacturing a nonaqueous-electrolyte secondary battery included a step of covering a laminating structure laminated at least a positive electrode and a negative electrode, and formed in a flat shape, comprising steps of:

fusing a sealing member;

whereby the sealing member is inserted between a lead electrode whose one end connects to the said laminating structure and the other end of that protrudes from an end of the package member toward the outside, a heater is applied pressure at least to the end of the package member from the outside, the stripping sheet made of a material such that at least its surface does not fuse and adhere to the sealing member, is inserted between the heater and the package member, or the sealing member; and

stripping the stripping sheet from the package member, or the sealing member;

whereby after the sealing member can spread between the lead electrode and the package member without a gap by heating and fusing the sealing member, the stripping sheet is stripped from the heater, then the fused sealing member re-solidifies, and is made in a solid state.

11. A nonaqueous-electrolyte secondary battery according to claim 10, wherein the sheet-like package member is covered with the package member employing a metal laminate pack material comprising package resin, a metal film, and a sealant layer, and sealed in its end.

12. A method of manufacturing a nonaqueous-electrolyte secondary battery according to claim 11, wherein the positive electrode is employed a transition metal chalcogen compound as an active material; and

the negative electrode is employed a material capable of doping and un-doping lithium as an active material.

13. A nonaqueous-electrolyte secondary battery according to claim 12,

wherein the positive electrode is employed lithium mix oxide whose main base is LiMO_2 (transition metal M is a material selected from a group of Co, Ni, Mn), and

the negative electrode is employed a non-graphitizing carbon material, or a graphite material.

14. A method of manufacturing a nonaqueous-electrolyte secondary battery according to claim 10, wherein solid electrolyte, or gel-type electrolyte is included.

15. A method of manufacturing a nonaqueous-electrolyte secondary battery according to claim 14, wherein the electrolyte is gel-type electrolyte.

16. A method of manufacturing a nonaqueous-electrolyte secondary battery according to claim 15, wherein the gel-type electrolyte made of a fluorine macromolecular material included an electrolyte salt and a solvent.

17. A method of manufacturing a nonaqueous-electrolyte secondary battery, comprising steps of :

fusing the sealing member by heating at temperature over the fusion temperature of the sealing member with a heater;

whereby a sealing member made of a thermoplastic material is disposed in a predetermined position in a lead electrode, and a heater is applied pressure at least to the sealing member from the outside, a stripping sheet made of a material such that at least its surface does not adhere to the sealing member, is inserted between the heater and the

sealing member;

separating the stripping sheet from the package member, or the sealing member;

whereby after the sealing member can spread between the lead electrode and the package member without a gap by heating and fusing the sealing member, the stripping sheet is separated from the heater, then the fused sealing member re-solidifies, and is made in a solid state.

18. A method of manufacturing a nonaqueous-electrolyte secondary battery according to claim 17, wherein the sheet-like sealing member is covered with the package member made of a metal laminate pack material comprising package resin, a metal film, and a sealant layer, and is sealed in its end.

19. A method of manufacturing a nonaqueous-electrolyte secondary battery according to claim 18, the positive electrode is employed a transition metal chalcogen compound as an active material;

the negative electrode is employed a material capable of doping or un-doping lithium as an active material.

20. A method of manufacturing a nonaqueous-electrolyte secondary battery according to claim 19, wherein the positive electrode is employed lithium complex oxide, whose main base is LiMO_2 (transition metal M is a material selected from a group of Co, Ni, Mn);

The negative electrode is employed a non-graphitizing material, or a graphite material.

21. A method of manufacturing a nonaqueous-electrolyte secondary

battery according to claim 20, solid electrolyte, or gel-type electrolyte is included.

22. A method of manufacturing a nonaqueous-electrolyte secondary battery according to claim 21, wherein the electrolyte is the gel-type electrolyte.

23. A method of manufacturing a nonaqueous-electrolyte secondary battery according to claim 22, the gel-type electrolyte is made of a fluorine macromolecular material included an electrolyte salt and a solvent.